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ABSTRACT

An experimental study among fifth and sixth graders in three inner-city schools (which were predominantly white, predominantly black, and racially mixed, respectively) investigated the effect of simulation gaming as a teaching technique on students' racial attitudes. In each school, an experimental group was exposed to "Equality," a 4-week simulation game in which students were involved in various readings and role-playing exercises, and then took on different roles as citizens in a community which had to resolve a conflict over school desegregation. Control groups in the three schools were exposed to the same topic in the same amount of time, through the lecture discussion method. Racial attitudes before and after the treatment were measured on the Anti-White Scale. Results indicated that: (1) the racial attitudes of blacks and whites were at the extreme ends of the criterion measure, and neither simulation gaming nor lecture-discussion could significantly change these attitudes; and (2) school racial composition accounted for significant differences in racial attitudes between blacks and whites. (MJL)

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SIMULATION GAMING AND RACIAL ATTITUDES

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Education that is multi-cultural is fast becoming an "in phrase" in education circles today. America, the melting pot, is giving away to America, the pluralistic society. In an effort to deal with multi-cultural concepts in the classroom, this researcher felt that it would first be necessary to assess social attitudes and to see if one teaching technique (simulation gaming) could help students become more tolerant of their fellow students. This study was conducted in a large, southern, urban school district.

Can classroom teachers affect changes in the racial attitudes of children through effective teaching procedures and more precisely, can a simulation gaming exercise dealing with racial attitudes change the feelings of low income fifth and sixth grade students? The null hypotheses were that:

1. There would be no significant difference between the mean scores of a pretest, $posttest_1$ and $posttest_2$ of students involved in a simulation game and a lecture-discussion.
2. There would be no significant difference between the mean scores of the pretest, $posttest_1$ and $posttest_2$ of the students in the Treatments when they were grouped by sex.
3. There would be no significant difference between the mean scores of the pretest, $posttest_1$ and $posttest_2$ of the students in the Treatments when they were grouped by race.
4. There would be no significant difference between the mean scores of the pretest, $posttest_1$ and $posttest_2$ of the students in the Treatments when they were grouped by school.
5. There would be no significant difference between the mean scores of the pretest, $posttest_1$ and $posttest_2$ of the students in the Treatments when they were grouped by the racial make-up of the class.

Since the 1954 Supreme Court Brown vs Board of Education decision, the country and more specifically the public schools have been intimately involved in efforts to successfully integrate. Within the schools, social scientists have been personally involved in helping to develop new curricula to deal with the problem of how to make children more tolerant of different races.

One new approach to handling social education has been the increasing usage of simulation gaming in the classroom. Modern simulation gaming methods are considered by many to have had their origin during World War II with the development of the Monte Carlo Methods by the scientist Von Newmann and others in conjunction with the development of the atomic bomb (Hammersley and Hanscomb, 1964).

The idea of constructing games for specific classroom uses dates back to the 1950's. The research on games has been done mostly by the developers as well as some individual users. Some of the beginning research in games was done by two of the early developers at Johns Hopkins University, Sarane S. Boocock and James S. Coleman (1966). Some of the other early researchers were Harold Guetzkow (1962) at Northwestern University, Clark Abt (1970) of Abt Associates of Cambridge, Massachusetts, Andrew Scott of the University of North Carolina, Richard Wing of the Northern Westchester Board of Cooperative Educational Services, and the Western Behavioral Sciences Institute at La Jolla, California.

The research on simulation games has been centered around three basic areas: cognitive, behavioral and attitudinal characteristics. This review will concentrate on these three areas with emphasis being placed on the attitudinal characteristics.

Before studying any specific educational characteristics of simulation games, the necessity of establishing the "goodness of fit" model for simulation games in classrooms should have been studied. Unfortunately, few studies

specifically dealing with the problem of whether simulation gaming techniques could be successfully adapted to established patterns of teaching were undertaken. Shirts and Sprague (1966) attempted to research this area by investigating educational games to see if they could fit within the time, space, administrative, and curriculum constraints of the school and to develop hypotheses about the use, effects, and potentiality of such exercises in the school systems. The results indicated that the students found simulation a more attractive learning experience than more conventional techniques. This study also suggested that simulations are conventional enough in appearance and in superficial effect to gain acceptance into the public school system and yet they (a) excite students about learning, (b) help them learn how to learn (by provoking inquiry), (c) provide experimental tools for learning, and (d) influence the classroom climate so that subsequent sessions allow for more relevant learning activities. These conclusions are of questionable scientific value because Shirts and Sprague established few research controls and most of the conclusions were subjective in nature.

Most other studies in simulation gaming have merely assumed that such educational exercises could operate within institutional constraints, and little evidence has been found to dispute or reinforce this assumption. To categorize the following studies according to specific characteristics such as cognitive, behavioral, or attitudinal is difficult in many instances because of the overlapping qualities. Studies reviewed are those that deal either directly with one specific characteristic or have their major emphasis on one particular area.

Cognitive Simulation Games

In the area of cognitive development, Allen, Allen, and Miller (1966) investigated the differences in success experienced by students of different sexes in the game Wiff 'N' Proof. They found that although boys gained more knowledge from the experience, girls could match their performance by retaking the test given at the end of the experiment. Also, they found that students using the

game scored significantly better on a test devised by the authors than did the control group of students. This result leads to the possibility of developer bias with regard to the test.

Garvey and Seiler (1966) in the teaching of international relations to high school students compared experimental classes using an adapted version of the Inter-Nation Simulation exercise with control classes employing conventional lecture-discussion methods. The Watson-Glaser Critical Thinking Appraisal and the Cornell Critical Thinking Test were given to both groups to test skills. The study indicated that the control group performed better on most tests than did the experimental group. Little evidence was provided to support the hypothesis that the use of simulations in conjunction with other teaching techniques enhance the ability of the student to acquire more cognitive data or to think critically.

In a study involving junior college students enrolled in an economics course using the simulation game Marketplace, Wentworth (1972) found that the students in experimental groups involving game play scored lower on content than did students in control classes who had not used simulation games. Also, there was a significant retardation of student learning of economics.

Sarane S. Boocock (1966) conducted an experiment in simulation gaming during a 4-H convention using the students attending the convention as the population for the study. She collected data from experiments with seven different games using her own tests of student learning. The participants' responses to pre- and posttests of learning were compared and Boocock concluded that the study provided: (1) inducement to student motivation and learning; (2) vicarious experience; (3) intellectual learning; and (4) changes in student attitudes. The conclusions must be taken with caution since the tests used were of her own construction, the data collected may reflect a population bias in favor of high ability students, and her conclusions were somewhat speculative.

Finally, in the area of cognitive characteristics, Chartier (1972) used the game Generation Gap with undergraduate students in an introductory speech class to investigate the cognitive impact of combining a simulation game with what he described as "instrumented discussion." He found no significant differences between the level of cognitive learning in the experimental and control groups.

Behavioral Simulation Games

In the area of research on simulation games dealing with behavioral characteristics, Livingston (1971) reported on two studies which investigated the effects of the Democracy game. The results supported the hypothesis that Democracy does increase students' tolerance of "logrolling" by congressmen. He also stated that along with the similar finding of other games a simulation game can be expected to increase the player's level of tolerance, approval, or empathy for the real-life person whose role the player takes in the game.

The Parent-Child Game was used by Schild (1966) to identify variables crucial to winning in game play. He maintained that previous research in games and simulations was inadequate because it measured the wrong variables; most of the previously measured variables were unrelated to behaviors needed for winning. He suggested that simulations shape student behavior by reinforcement (winning) and that this is how games should be evaluated: that is, does the simulation game set up contingencies which reinforce effective strategies for successfully competing in the game? He used four groups of secondary and college students to play the Parent-Child Game and found consistency from group-to-group in the type of strategy used by players to win the game. He concluded that the behavior of players was shaped by the structure and rules of the game, rather than other influences, and that strategies learned in one game transfer to another.

Lastly, an attempt to define the crucial variables to measure educational outcomes of game play were conducted by Fletcher and Dobbins (1970). Ability to make accurate predictions was the important dependent variable tested. The impact of repeated plays of a particular game on this student characteristic was investigated. The results indicated that the experimental group which participated in a number of repeated plays made more accurate predictions than did the control group.

Attitudinal Simulation Games

The relationship of attitudinal changes to simulation gaming, like the cognitive and behavioral characteristics, has also received much study. Cohen (1969) did a study on the effects of two simulation games, Democracy and Consumer, on the opinions and attitudes of sixth, seventh, and eighth grade students. The purposes of the study were: (1) to attempt to involve students who were not interested in, or were not benefiting from, the traditional classroom approach, and (2) to introduce to regular teachers this relatively new or different kind of teaching. The evaluation included asking the students to compare the games with the traditional classroom approach. The conclusions were as follows: (1) the students enjoyed the games; (2) there was some attitude change; (3) games should be used as a supplement to the traditional curriculum; (4) Consumer seemed preferable to Democracy; (5) the game method seemed to encourage out-of-class discussion; and (6) the teachers enjoyed the game approach.

Miller (1969) did a study using simulation techniques to change attitudes of students enrolled in general safety education. He used simulation games and found that they appeared to change attitudes significantly. Stadsklev (1970) using the Inter-Nation Simulation Game pre- and posttested his students with attitude scales and found significant differences in student attitudes toward learning, favoring the simulation classes. Unfortunately, no attempt was made to verify validity or reliability of the instruments used.

Lloyd (1970) issued a questionnaire in his attempt to measure the effect of simulation gaming on college students' attitudes in an American history course, but his study had no conclusive results. In all the above cases, interest was assessed by subjective observation and no attempt was made to obtain objective data.

Clarke (1970) used a semantic differential attitude scale to evaluate students' reactions to a simulated national political convention. He reported positive reactions to the experience but no statistical analysis was described. Stahl (1970) used the Moods Adjective Checklist to determine how the mode of presentation affected students' affective reactions to the resolution of simulated problems. He found that greater visual media use is more effective in affecting positive attitude change in students than using simulations with little or no visual media. Hart (1970) attempted to determine whether a simulation game affects attitudes and increases motivation and cognitive learning. Seventy-six college students in four sections of a political science course were the subjects. Random selection placed them in two treatment groups and two control groups. Both groups received the game and one treatment and one control group received a presemantic differential. It was concluded that among the effects of simulation games, only the differences in the direction of polarization of attitudes were significant.

Racial Simulation Games

In the area of racial attitudes and simulation games, Livingston (1970) conducted a study investigating student attitudes toward the poor by playing the game Ghetto. He developed equivalent pre- and post-questionnaires with low reliability and validity to measure such a change. His findings show that students' attitudes were significantly more favorable toward the poor after playing Ghetto, but he also found a significant decline of student interest in the subject of poverty. Nelson (1970), also using Ghetto, experimented with

sixth graders and concluded that having players of a younger age had no adverse effect on the playing of the game. The students learned to see alternatives which they had not previously considered.

DeKock (1969) investigated the impact of the simulation game Sunshine on high school students' racial attitudes. He developed a test to measure attitude change. The results of his study indicate a positive change toward tolerance and acceptance of differences on the part of students who participated in the game. The generalizability of the study is limited, however, because no control groups were used for comparison and a self devised paper and pencil test was constructed.

Conclusion

From the literature presented in this section, there seems to be three major conclusions that can be drawn about simulation games. First, they do not appear to have any clear advantage in teaching content to students. If content learning is the major instructional goal, it appears that other activities and techniques are as equally effective. Second, games and simulations appear to be influential in encouraging students to become more actively involved in the learning process. A teacher trying to involve students in learning can receive considerable aid from the available simulations and games. Third, games and simulations appear to have a positive influence on student attitudes. However, this may be due more to the novelty and quality of each exercise than any other factor. A boring game is just as educationally useless as a boring book or lecture.

PROCEDURES

The Simulation Game Equality

The simulation game used in this study was Equality. There are three major components of a simulation game: an operating (1) model of a (2) physical or symbolic representation of a (3) social or psychological process. Equality is an operating model. It is a model of the struggle for racial equality in a "typical" American city. The "typical" American city is divided into six basic communities ranging from very poor to very wealthy with combinations of all the intermediate stages in-between. Within each of these communities students play the role of a specific individual whose demographic characteristics are given to them. Equality does answer the criterion of a model by modelling the ethnographic characteristics of our society.

To be an effective model, the simulation game must be a physical or symbolic representation. Equality is basically symbolic with the emphasis on the representational city and the hypothetical roles that the children assume. Physical representation is created by setting up the classroom into six typical communities and having the children sit in the community according to the identity they have chosen. Also, role-playing situations assist in the physical and symbolic representation.

Finally, a social or psychological process must be involved. Equality involves a social process by having each of the six communities elect a member to a fictitious school board that must act on the social problem of school integration. By creating a school board situation, all players are given a chance to air the beliefs of the identity they assumed in the beginning at the school board meeting. The game concludes with the school board election.

Thus, Equality appears to be a true simulation game. In addition to the basic three criteria, Equality has been designed as a full four-week unit on racial attitudes. Included with the model simulation and the role playing,

there is also a five-day section of historical readings involved with information giving on the racial problems of our country. Equality is a well-designed simulation game meeting all the criteria of simulation gaming.

The Population of the Study

The population of this study constituted the fifth-sixth graders in three inner-city schools with each school having a treatment and control group. There were many similarities between the groups: each of the three schools were listed as inner-city, poverty schools; all students in the study came from the same economic background; and the classes were not grouped by ability level. Each of the three schools was designated as a target school by the school system, implying that each school had several innovative programs going on especially in reading and mathematics in an effort to upgrade the student performance in these areas. Also, each of the schools was involved in team teaching. The experiment was done during the day when the self-contained classroom concept was in operation.

The major difference in the population was the racial makeup of the groups. One of the three groups was predominately white, one was predominately black, and the third was racially mixed. In the predominately white school, the racial make-up of the treatment and control group was seventy-three percent white and twenty-seven percent black; in the predominately black school, the racial make-up was four percent white and ninety-six percent black; and in the racially mixed school, the make-up was fifty-four percent white and forty-six percent black. This difference in racial make-up was a significant part of the study since each group was compared to the other. Another difference in the groups was the male-female ratio. In all of the classes but one, there were more females than males, but the overall ratio of male to female was equal.

Considering all of the major demographic characteristics all three groups were very similar except for the difference of race. Because of the make-up of the schools, the groups were intact and no randomization of subjects took

place. This was a limitation of the study, but one that was tolerated and will be dealt with further on in the analysis of the data.

The Methods of Instruction

The two methods of instruction used in the research was simulation gaming and modified lecture-discussion technique. The major objective of each approach was to modify student racial attitudes through a greater awareness of the fact that racial differences do exist and that if we are to exist peacefully in our society, we must be tolerant of the differences and see that every person is a human and deserves respect regardless of race or color.

The Outline of Equality

The simulation game, Equality, is a four-week unit with specific tasks outlined for each day. The first four days involved a fantasy reading in which members of another planet came to earth and took earth children back to their planet to be enslaved for the purposes of performing all the menial labor tasks for the conquerors. After the reading had been comprehended, each student had to write diary entries dealing with some aspect of the reading for the purpose of identifying their feelings.

The fifth day involved the random selection of identification tags by the students. These tags described a certain person in the make-believe city and each student, for the remainder of the game, assumed the role of the tag he drew. After drawing the identification tags, the students rearranged the classroom by setting up their communities according to the group in which the identification tag placed them. For the remainder of the game, the students always sat in these communities. Finally, on the fifth day, the teacher discussed self-image with the students. The three key points here were a discussion of real self-image, social self-image, and ideal self-image. Lastly, the students were given an Image Points Sheet (IMPS) on which they were to record all the points they received during the simulation game.

From the sixth through the tenth day, the basic activities of the game involved a series of five historical readings dealing with slavery in this country from its early seventeenth century origins to the twentieth century and a discussion of the language of prejudice. After each reading, the students were involved in an activity related to the reading. These activities ranged from discussion to drawing with a short quiz on all five readings after completion of the fifth. During the entire period of the readings, the students were introduced to role-playing. Pressure cards which described unfortunate instances for members of the community were given out each day and the students who were affected by the pressure cards role-played the scene and reacted to how they felt about being made to do certain things.

The eleventh through the fourteenth days involved major role-playing situations. The teacher set-up the designated scene and over the four-day period each student got to role-play a situation. After each major role-playing scene a discussion followed and the students evaluated the effectiveness of those involved in the role-playing.

On the fifteenth day, the previous experiences of role-playing, readings, and fantasy experience began to culminate. The students were given the community crisis material in which was described a community that was split over the problem of racial integration of the schools and this community had to resolve the conflict. Also, each community of the city selected a member for the school board. This school board member was responsible for expressing the views of his community.

The school board meeting began on the sixteenth day. This meeting was an open-ended exercise dependent on the level of student involvement. The culminating act of the school board, after hearing the views of community members, was to decide on if and how the schools should be integrated.

The final action of the simulation game was the de-briefing evaluation. During this time the students evaluated the simulation and discussed what each

had learned from his experience in the game.

The Outline of the Modified Lecture-Discussion

The modified lecture-discussion method involved the same time period as the simulation game. Instead of students experiencing simulated racial problems, the students in the modified lecture-discussion were told directly about problems. The three teachers involved in this method conducted classes with themselves as the chief information givers.

The first two weeks involved lectures on "Racial Concepts" and "Black History." The racial concepts section included such ideas as integration, segregation, prejudice, blackness, whiteness, community housing problems, poverty, welfare, and other racial minorities. The black history section included lectures on a need for black history because of the bias in regular history texts, and a brief discussion of black origins in Africa.

The final two weeks consisted of the five "Basic Readings" that were used in the simulation game and five film strips in a series, entitled Men of Thought--Men of Action, that compared a prominent black and white man of the same period throughout the history of this country. After each of the readings and filmstrips, the teachers took the remainder of the time in the forty-five minute period (about fifteen minutes) to point out important information to be learned and to hold a short discussion on the importance of each exercise.

The Design of the Research

This research was a non-equivalent control group (Campbell and Stanley, 1963) of a simulation game and a lecture-discussion; an investigation of the effects of two different teaching approaches upon students' racial attitudes over a particular time period. The major question asked was--is there a difference in the effects of the treatment with students grouped by sex, by race, by racial make-up of class, and by school: The dependent variable was a racial attitude scale administered at three points in time. A pretest was given and was followed immediately by $posttest_1$ and $posttest_2$ was given two months later.

The classification variables were the schools, the treatment, the sex and the student race. The teacher variable was one limitation of the design since each group had a different teacher. This was necessary since three different schools and six different clases were used. The simulation game and the lecture-discussion were designed to run for five weeks, four days a week, forty-five minutes a day.

The Test Instrument Used

An ethnocentric measure, the Anti-white scale by Steckler (1957), was used to measure racial attitude changes resulting in both the treatment and the control groups because this scale was short and very readable for elementary students. Also, its correlation with the very reliable ethnocentric scales, the California E and F scales, was very high. The scale consists of eighteen items with a bias against whites. The items are such that they lend themselves more to the testing of nonwhite than white samples. Steckler's original sample consisted of 299 college students and members of church groups.

The responses to each item was on a Likert-type continuum from: strongly agree, agree, undecided, disagree, to strongly disagree. For negative items, the weights are assigned the response alternatives from 5 (strongly agree) to 1 (strongly disagree). Weights for the positive items must be reversed. The person's score is the sum of the weighted alternatives endorsed by him with the higher scores reflecting anti-white attitudes.

The split-half reliability of the scale is .88. The scale also appears to have very good content validity. Steckler reports correlations of .60 and .55 between the anti-white scale and the California E and F scales respectively. Thus, these correlations may be taken as evidence of concurrent validity for the scale.

The anti-white ideologies incorporated into the scale were conceived of as relatively organized and stable systems of opinions, values, and attitudes regarding blacks and whites which involve negative, stereotyped opinions, and

hostile attitudes regarding these races. They also include moral values which justify the attitudes and permeate the opinions. The items assert that whites are intrusive, untrustworthy, dishonest, and inferior in certain spheres, and advocate that they be deprived of their present power.

Finally, in discussing the anti-white scale, Steckler says that the evidence of the tested scales indicates that a particular kind of authoritarianism--identification with and conformity to values and norms of the white majority--is prevalent among blacks. It is suggested by the scale that the standards with which black students identify are the narrowly perceived and rigidly adhered to values of the white middle class.

Analysis of the Data

The analysis of variance used to test the null hypotheses that no significant differences existed between means was a two-factor mixed design with repeated measures on one factor or the split-plot design. It permits comparison of the differences in the overall performance of the subjects in the several experimental groups, and it also permits evaluation of the changes in performance shown by the subjects during the experimental session (Winer 1962). The two factors in this study were treatment and time. Repeated measurement was on racial attitudes at three points in time.

Conclusions

1. The modified lecture-discussion did not produce significantly different mean scores on the criterion measure. Thus, one is not able to conclude the preference of one of these methods over the other in changing racial attitudes.
2. The races differed on the criterion measure. The racial attitudes of blacks and whites were at the extreme ends of the criterion measure and neither simulation gaming nor modified lecture-discussion was able to significantly moderate these racial attitudes.

3. The school accounted for significant differences in racial attitudes. School 1 (predominately white) -- the treatments did lessen differences in attitudes between blacks and whites but not enough to be significant. The greatest difference of racial attitudes existed between black and white females and this was highly significant. School 2 (predominately black) -- the simulation game was highly significant in regard to the time variable. Also, there were significant interactions between the treatments, time and sex. Unfortunately, these significant interactions were suspect because of the very non-orthogonal make-up of this school. School 3 (racially mixed) -- race was not significant, but the mean scores of one race were significant when compared to the other racial group. Thus, again we can see that the treatments were not significant in lessening racial attitudes. Overall, there was a significant interaction between time, school, and treatment. The major cause of this significance was the simulation gaming class in school 2 between the period of $posttest_1$ and $posttest_2$. Apparently something happened in school 2. Whether this was the cause of the simulation game or some other outside variable is unexplained.

Discussion

Inspection of the data presented in the study revealed the high significance that race and school played in affecting racial attitudes. Because of the high significance of these two variables, one is encouraged to find an effective instructional model in racial attitudes powerful enough to counteract these two variables.

In the predominately white school there were highly significant differences between black and white females. This significance was indicated by less obtrusive measures during the experiment. The black females in the predominately white school were more aggressive, hostile, and more aware of their blackness than their black male counterparts. The white females on the other

hand were less aggressive, and less hostile than their white male counterparts.

In the predominantely black school the simulation game had a reverse effect during the two month time period between $posttest_1$ and $posttest_2$. Racial attitudes reached a high anti-white level. Explanation of this effect is difficult. One possible explanation is the "History" effect as outlined by Campbell and Stanley (1963) in their book on Experimental and Quasi-Experimental Designs for Research. The last section of the simulation game, Equality was concerned with electing members to a school board and then having a meeting to determine if and how the schools should be integrated. The treatment 1 group in the predominately black school voted unanimously at the school board meeting not to integrate the schools. Simultaneously with the ending of the simulation game and $posttest_2$, a real life school integration problem began to unfold. The school system had submitted a plan for busing of students to achieve racial balance and school 2 was listed as one school that would definitely be bused to suburban schools. Thus, possibly the real situation lent much meaning to the simulated situation that the students had just experienced and this major reaction was reflected in $posttest_2$.

In conclusion, there is a large gap between white racial attitudes and black racial attitudes and neither simulation gaming nor modified lecture-discussion was effective enough as an instructional tool to bridge this gap.

Limitations

There were several limitations to this study--the non-randomization of subjects, the teacher variable, and the non-generalizability. Because of the nature of the study, it was not possible to randomize subjects. This was because the study was done in schools in which the students had already been assigned to specific classes. Thus, the researcher had to accept whole classroom groups which prevented randomization. The teacher variable limitation resulted because six distinct classroom groups were used and hence, six separate teachers. Finally, the results cannot be generalized beyond the

particular setting of the study because of the attributes and history peculiar to the schools involved in the research. For the study to be more generalizable more student groups from different localities would have had to be tested in order to see if the same results occurred.

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